IPLA
Indiana Principal Leadership Academy
A division of the Indiana Department of Education

SPECIAL EDITION

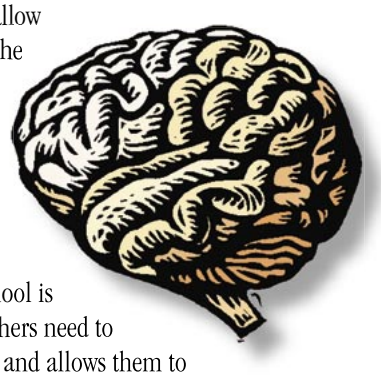
INSIDE

Nine Elements of Brain-Compatible Learning

By Vince Barnes, IPLA Executive Director

In the past twenty years there has been more research than ever before on the function of the brain and its effects on learning. It is vital for all educators to become familiar with this research because it is the student's ability to learn that must be the first goal of all of our schools. Teachers and administrators must become aware that learning involves our multiple intelligences, emotions, movement, personalities, and much more. Educators should not only be proficient in their subject matter, but also knowledgeable in the functioning of the brain and what elements make a brain-compatible classroom and school. According to Susan Kovalik, Susan Kovalik and Associates, there are nine elements of brain-compatible learning needed to apply the research through the curriculum.

• In order for students to excel and surpass their potential in the classroom, the first element of Kovalik's ITI Model (Integrated Thematic Instruction Model) is probably the most important element. This element is creating an absence of threat environment. The teacher is responsible for creating an absence of threat environment by implementing character education in all aspects of the curriculum and classroom management. This will allow the community within the classroom to base all relationships on mutual respect. The teacher also needs to empower the students to establish procedures and use a daily agenda as a guide for learning. With procedures and a daily agenda in place, the students will know what to expect at all times within the classroom. This notion of an absence of threat will go even further if the building principal empowers the students and staff to incorporate these items school-wide. This will ensure a consistent environment throughout the school for all students and staff.



• The next essential element in creating a brain-compatible classroom or school is providing meaningful content throughout the curriculum for the students. Teachers need to select content within the curriculum that is connected to the lives of the students and allows them to understand how it is meaningful to them. The brain is a pattern-seeking device that takes in new information and searches for connections with past experiences. If teachers provide information that is linked with their experiences, then the information is more likely to transfer to long-term memory. If the students do not have any experience with a concept, then the teachers need to create this experience through either study trips or a simulation within the classroom.

• Another aspect of creating a brain-compatible classroom is to provide choices for the students. Students should be able to have options at times considering the different intelligences and personalities within the classroom. Not all items need to provide choices, but at times students should be able to choose an option involving the curriculum. Many schools are geared towards those students who are strong in the areas of linguistic and logical reasoning. Choices are also important for students because it empowers them to take responsibility for their own learning.

• Adequate time is another important factor in creating a brain compatible classroom. It is essential that teachers provide enough time for students to thoroughly explore, understand, and use information and resources. Many times

(continued on next page)

indiana principal leadership academy

Roger Taylor
Motivation of Students, Whether At-Risk or Gifted

November 12, 2003
from 8:30 AM to 4:00 PM

At the Sheraton Indianapolis Hotel and Suites
Keystone at the Crossing

This is an RSVP event. A registration form can be found on the IPLA website at www.doe.state.in.us/ipla. Please complete the registration form and return it with a $50.00 check or P.O. made out to the IPLA Alumni Association.

RSVP by November 3, 2003

continued from page 1

schools put restrictions on assessments and exploration in the curriculum and students are not allowed to adequately learn the necessary skills needed for mastery.

•Providing an enriched environment for all students is another element that a teacher and administrator must consider. It is important to the climate of the building and the classroom to have an inviting environment, in which students feel free to take risks and reach their fullest potential. If the environment of the school is not inviting for students, staff, and parents, then there might be some unperceived threats that become a part of the school climate or culture.

•The sixth element in creating a brain compatible classroom and school is putting into place the idea of collaboration. Long gone are the days when teachers could work in isolation from each other. In today's schools, accountability is higher than it has ever been before in our history. Teachers are expected to work together to provide the most challenging curriculum for all students and raise test scores on high stakes state accountability tests. Collaboration is important for teachers to model to the students while they are planning curriculum and assessment pieces. Also, collaboration is important for students to use in order to problem solve, create products, and demonstrate teamwork.

•The next element that is essential is immediate feedback. When teaches provide immediate feedback on assessments on an ongoing basis, the students sustain motivation to learn and the teachers promote correct initial learning. Principals should also provide immediate feedback with teachers throughout the year, in order to ensure correct initial teaching.

•Movement to enhance learning for all students is important. For years, schools have insisted on students sitting still for hours at a time in a desk. Movement is crucial for all functions of the brain. Movement increases memory and learning. The brain needs active participation to perform better throughout the day. A balance of movement and seatwork is ideal for all classrooms.

•The last component of brain compatible learning is mastery and application. The reason educators provide a curriculum with standards and skills is so students can learn the information and be able to master and apply them. If students are not eventually mastering the standards and moving forward in the curriculum, educators are not providing mental programs in their brains to apply to life situations.

Indiana is fortunate to have a local model of Susan Kovalik's ITI Model with the C.L.A.S.S. program through the Department of Education. C.L.A.S.S. is based on the same elements of the ITI Model and focuses on Indiana's best practices as well. Important information on Kovalik's Model and C.L.A.S.S. in Indiana can be found at these websites:

www.kovalik.com
www.indianaclass.com

Brain Research and Its Implications in the Classroom

Marsha Reynolds, Principal of Crooked Creek School in MSD Washington Township

What a critical time it is to be certain students are thriving and achieving at their highest level within our schools! Local, state, and national initiatives remind us daily not only that "All children can learn," but that "All children must learn." Brain researchers seem to agree that students thrive in a brain-compatible learning environment. So what constitutes such a learning environment?

At Crooked Creek Elementary School in MSD Washington Township in Indianapolis, our staff members have developed numerous ways to foster the brain research and develop brain-compatible environments designed for high student achievement. These four key elements and some of our school strategies include:

SAFE, NON-THREATENING ENVIRONMENTS

- Morning Meetings build community and give all students an opportunity to voice concerns, joys, and questions.
- Bullying, sarcasm, and put-downs have no place within the school.
- Miss Manners stars each Tuesday on the morning news show.
- School-wide conflict resolution and peer mediation initiatives have been put in place.

ACTIVE, MEANINGFUL LEARNING

- An emphasis on a balanced literacy approach provides time to experience chunked, thirty-minute blocks of teaching and learning, each with a clear goal.
- Our partnership with a school in China allows students to be immersed in global studies.
- Empowering learners through technology, including distance learning, opens up more experiences.
- Richly integrating the arts and movement into each day is linked to higher achievement.

RICH, STIMULATING ENVIRONMENTS

- We have focused on numerous and varied teaching strategies.
- Attention is given to our to surroundings such as plants, music, color, and seating arrangements.
- The display of high quality student work, the use of a wide range of materials and manipulatives, the provision of numerous meaningful field trips, and much attention to student learning styles and the multiple intelligences have been integrated in the curriculum.

ACCURATE AND TIMELY FEEDBACK

- One of the most powerful forms of assessment used by our staff is the daily conference, occurring in our writing and reading blocks.
- Assessments include computer-generated ones such as Star Reading and Star Math, formal paper and pencil ones like ISTEP and CTBS, weekly formal and informal tests, reading and learning style inventories, and numerous rubrics for all subject areas.

Linking Student Choice in the Classroom with the Multiple Intelligences

"However hard some schools may seek homogeneity for their teachers by sorting students according to age, IQ number, achievement levels, and so forth, teachers face a group of students whose brains are more different than alike."

—Susan Kovalik and Karen Olsen in Exceeding Expectations: A User's Guide to Implementing Brain Research in the Classroom

The discovery of the unique ways in which the human brain processes new information has posed a challenging question to educators everywhere: How do we best meet the needs of our students in a classroom where one size does not fit all? Differentiated instruction is a popular educational buzzword at the moment but how many educators are tired of hearing what it *is* rather than *how* to incorporate it into their curriculum? We must show how to differentiate instruction if we want to reach our students.

In the classrooms of the past, students were to work as individuals in a highly competitive environment in which the stronger students did not socialize with the weaker ones, all students depended on the teacher for instruction, and the teacher decided how the students would be evaluated. Recent research on brain-compatible education has shown that all of these points do not encourage students to grow to their optimal level. However, the third point, that of the teacher deciding how students would be evaluated, is really the key to unlocking the door of learning. Gone are the days of assigning the same task to all students. Offering students a choice in the classroom will empower students, thus allowing them to experience freedom over their learning.

In his book, Choice Theory in the Classroom, Dr. William Glasser explains that there are five basic needs built into the genetic structure of human beings. They are:

- The need to stay alive and reproduce.
- The need to belong and experience love.
- The need for power.
- The need for freedom.
- The need for fun.

All of our behavior is an attempt to satisfy one or more of these basic needs. If a child feels powerless and restricted, he or she will most likely exhibit behaviors of frustration and "close the gate" surrounding the brain. However, if students are given choices, the need for power, freedom, and fun will be fulfilled. If tasks are performed in a group, relationships among students will grow and increase individual feelings of belonging. In addition, reluctant students will begin to exhibit an interest in learning, for the key to motivation is interest.

There are several ways to offer students choices in the classroom, but one of the most obvious ways to do so is through the multiple intelligences. The multiple intelligences, developed by Howard Gardner, is the theory that there are actually eight different ways of being "smart" rather than the traditional one or two. The multiple intelligences include:

- Logical-Mathematical: Keen problem solver; excels in science and math.
- Linguistic: Knowledge of words, language, grammar, and writing.
- Spatial: Enjoys art; easily reads maps; excels in putting together puzzles; thinks in pictures.
- Bodily-Kinesthetic: Prefers tasks that require movement.
- Musical: Translates language into musical patterns; learns through songs.
- Intrapersonal: Processes alone; must spend time with self; independent.
- Interpersonal: Processes with others; loves to talk; has many friends; empathy for others.
- Naturalists: Raises questions about the natural world; enjoys time in nature.

Traditionally, educators have designed their instruction and student performance tasks on the Logical-Mathematical and Linguistic Intelligences. Therefore, those students not considered to be Logical-Mathematical or Linguistic have difficulty experiencing success in school. We are all born with each intelligence; however, we tend to develop those valued most by our culture (home, school, community). Since learners are coming to us from many different cultures, we can be assured that we will need to differentiate by offering them choices of student performance tasks that exhibit their knowledge.

The best way to create student performance tasks is to begin with the curriculum content. What should students know? If students are learning about plants, the content might include basic needs, survival, adaptation, or interdependence of plant life. Next, consult an inquiry builder or matrix that utilizes Bloom's Taxonomy as well as the Multiple Intelligences. These matrices list Bloom's Taxonomy across the top with each Multiple Intelligence listed on the side. In the boxes where the two meet, process words are listed to help teachers design student performance tasks. Examples of process words include list, graph, create, explain, construct, and illustrate. A student performance task that is based upon the Application Level of Bloom's Taxonomy and also emphasizes the Spatial Intelligence could be as follows:

Illustrate a plant by drawing a picture or creating a model. Please label each plant part and describe how they work together to aid in the survival of the plant.

QUOTE CORNER

There are no such things as limits to growth, because there are no limits on the human capacity for intelligence, imagination and wonder.

Ronald Reagan

Other student performance tasks should be listed based upon the remaining Multiple Intelligences and levels of Bloom's Taxonomy. From these, students are able to choose the project that appeals to them the most. It has been suggested that a brief list of all student performance tasks be given to each student and when he or she has made a decision, they can be given a "work card" with more detailed directions. Certainly, these directions would have to be very basic and include pictures in the early primary classrooms. Examples of these matrices may be found in Susan Kovalik and Karen Olsen's book Exceeding Expectations: A User's Guide to Implementing Brain Research in the Classroom.as well as Differentiating Instruction in the Regular Classroom by Diane Heacox.

Gardner's Multiple Intelligence Theory clearly lends itself to allowing students to make choices in their learning which will enable them to feel the basic needs of power and freedom. Add some fun to these tasks as well as a chance to work in cooperative groups and teachers are well on their way to creating a brain-compatible, differentiated environment. In addition, teachers feel satisfied because students begin to exhibit a deeper understanding of the curriculum content. Choices of student performance tasks based upon the multiple intelligences will allow all of the unique brains in the classroom to learn – not just the Logical-Mathematical and Linguistic.

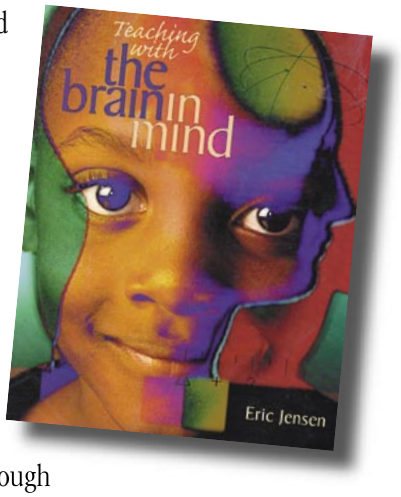
AUTHOR BIOGRAPHY:

Natalie Chambers is a former elementary teacher and technology integrator for the M.S.D. of Pike Township and is now serving as a Literacy for Life and C.L.A.S.S. Coach. She has also begun studies to obtain a master's degree and doctorate in Educational Leadership at Indiana University.

BOOKS FOR LEADERS

Teaching with the Brain in Mind

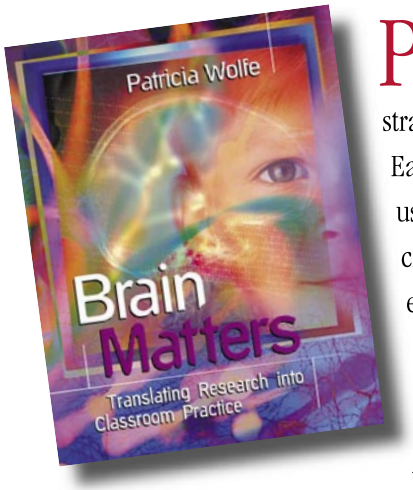
By Eric Jensen



Teaching with the Brain in Mind balances the research and theory of the brain with successful tips and techniques for using that information in classrooms. From its primer on brain biology to in-depth discussions of emotion, memory, and recall, Teaching with the Brain in Mind is an invaluable tool for any educator looking to better reach students through truly brain-compatible teaching and learning.

Brain Matters: Translating Research into Classroom Practice

By Patricia Wolfe



Practical classroom applications and brain compatible teaching strategies can be found in this book. Each chapter provides examples using brief scenarios from actual classroom practice, from lower elementary school to high school. Everyone agrees that what we do in school should be based on what we know about the brain. This book provides teachers with a much more solid foundation on which to base educational decisions.

Redesigning a School

Matching Instructional Practice With How the Brain Learns Best

Schools are often accused of trying to change methodologies in such small, meaningless steps that systemic and effective change seldom occurs. We are often afraid to make those changes in how we operate because the customs and culture of school business dictate that we move slowly. Therefore, a shift in how we configure our schools' operation and instructional practice must occur if we are to meet the challenges of society and educational expectations. At North Montgomery Community School Corporation (NMCSC), we decided to redesign the basic structure of the middle school, striving for the best possible learning environment for students. Using research as our guide, we plunged headfirst into modifying the daily schedule and classroom practice at Northridge Middle School. This has been accomplished with consensus building, professional development, and a clear focus on what is appropriate and effective for the middle school student of today and tomorrow.

The schedule was the first design flaw to be examined. The *Prisoners of Time Report of the National Education Commission on Time and Learning* (1994) sites that "some students take three to six times longer to learn the same thing… yet students are caught in a time trap, processed on an assembly line scheduled to the minute." Middle school students traditionally pass from one class to another seven or eight times a day, with class periods of 40-50 minutes. Marilee Sprenger's *Learning and Memory: The Brain in Action* (1999) validated our belief that excessive transition in a young student's daily routine is not conducive for an effective learning environment. According to the work of Baddeley (1990), "the brain has limited space for short-term items, but the older you are, the more spaces you have for short-term memory." Sprenger describes this type of memory as "a developmental phenomenon." When students have from seven to eight classes per day, not only their short-term memory is challenged, but also their working memory and long-term memory. Working memory involves repeated study of information, without connecting it to prior knowledge or meaningful patterns established in the brain. The traditional schedule forces students to "cram" for so many different, isolated classes, that it prohibits the development of enduring understandings that will make it to permanent storage, long-term memory.

This transition time within the traditional schedule has been problematic in other areas as well. Teachers and administrators were spending much of the day monitoring the hallways. Two years ago, 50% of all discipline referrals at Northridge had resulted from such problems. Tardies were at a record high. The numbers of student failures were also on the rise.

The research and data confirmed that a change in schedule was imperative to provide appropriate learning conditions for all students. The studies also made the leadership team realize that professional development would be key in making a new schedule effective for students and teachers. Teachers had adapted to the traditional fragmented day by developing a delivery system of instruction that was more like a one-man band instead of a conductor of an orchestra. Short periods were not conducive to labs, hands-on activities, cooperative learning, or in-depth study. However, by increasing instructional minutes the challenge would also be to ensure that longer periods would not become what many studies have indicated as "lecture-recitation" as the primary mode of instruction. (Goodlad, 1984; Hoetker & Ahlbrand, 1969; Sirotnik, 1983).

A study of the schedules (see charts) was conducted, along with the previous research, and accountability requirements and research provided through P.L. 221 and NCLB. Northridge concluded that a modified trimester could significantly impact teaching and learning.

The length of the school day and year are difficult to change. However, redesigning what we do within the daily schedule and year is not. The schedule is rooted in the High School Trimester or 3x5 Model. Robert Brower, Superintendent of NMCSC, initiated the 3x5 movement in Indiana six years ago as principal at Westfield High School (WHS). With his experience and guidance, we have developed a schedule that is already producing similar results to those of Westfield. Over the last six years on the trimester, WHS has seen the following gains:

- 22% percent increase of students on the academic honor roll
- 12% percent decline in the failure rate of students
- 1% point gain in the attendance rate
- 9% increase of the graduation rate of students
- 31% decline in disciplinary referrals from teachers

FOUR DIFFERENT MIDDLE SCHOOL MODELS

	8 Period Day	Block 4	Block A/B	Trimester
Allocated minutes of instruction per **math** and **language arts** classes	40	80	80	65
Allocated number of school days	180	90	90	180
Total allocated minutes of instruction per **math** and **language arts** classes per year	7,200	7,200	7,200	11,700
Allocated minutes of instruction for all **other** classes	40	80	80	65
Allocated number of school days	180	90	90	180
Total allocated minutes of instruction for all **other** classes per year	7,200	7,200	7,200	7,800

The high school trimester is based on the premise that by dividing the school year by three and having longer class periods, students will be able to take more classes than they would on a traditional schedule, without losing any instructional minutes. Two trimesters equal the same instructional minutes as two semesters. Therefore, another 1/3 of a school year is gained, or in this case, another trimester of math. The Northridge Middle School model utilizes three trimesters for language arts and math in the 6th and 7th grades, and 2-3 trimesters available to 8th grade students depending on staffing and the number of academically at-risk in these areas. Three trimesters of each gives students an additional year of instruction by providing four year's worth of instructional minutes in three school years. The new schedule makes better use of allocated time, with more time in the classroom and less in the hallway. Students also receive more instructional time in other core classes such as social studies and science.

Required Course Trimesters per year

Grade	6th	7th	8th
Math	3	3	2-3
Language Arts	3	3	2
Reading	1	1	1
Social Studies	2	2	2
Science	2	2	2
Physical Education			2
Health			1
Wellness	1	1	

Exploratory Courses
Computer Applications, Art, Choir, Music Appreciation, Band, Family Living, Reading/ Writing Workshop (Students choose three.)

INTERVENTIONS

One of the goals in the school improvement plan is improved reading performance. One strategy involves the use of Sustained Silent Reading (SSR). The bonus period, which equals ninety minutes per week, is used for SSR. All students and staff are engaged in SSR, thirty minutes per day, every Tuesday, Wednesday, and Thursday. The most recent STAR Reading data reveals that this year's 7th grade class has a 13% increase in the number of students reading independently at or above grade level (from 53% to 66%). The 8th grade class has a 5% increase in the number of students reading at or above grade level independently (from 42% to 47%).

Student grades are monitored very closely. If a student is failing, or at-risk of failing, his/her schedule is revised and he/she is placed in a Guided Study class immediately. The student receives 1-on-1 or small group instructional and/or counseling support. To measure the effectiveness of Guided Study, student grade data has been compiled from the first trimester of each of the past three years, to compare failure rates:

'00-'01: **9%** '01-'02: **7%** '02-'03: **6%**

AN IMPROVED ENVIRONMENT

With the implementation of the new schedule, four main areas have greatly improved the quality of the learning environment:

1. Fewer discipline referrals—Comparing data from the first 12 weeks of school:

'00-'01: **293** '01-'02: **140** '02-'03: **45**

2. Teachers prepare for four classes instead of six—This not only allows the teachers additional time to plan for differentiated instruction, but also gives them a 65-minute planning period each day. This time is used for shared planning and examining student work among each grade level. The 65-minute classes are more conducive for instruction that builds those neural networks for students. Time now exists for experiential, standards-based problems, projects, and simulations that allow for students to apply their learning and authentically demonstrate understanding.

3. Students prepare for five subjects instead of seven—Narrowing the scope of content areas allows for better bridging and the connection of information, thus diminishing the need for students to cram for classes.

4. Teachers are responsible for fewer students per trimester—Teachers have the opportunity to build better rapport with students and parents.

PROFESSIONAL DEVELOPMENT

The leadership team worked to develop building-based schedules that would include on-going, job-embedded professional development. Northridge has included time within the schedule that allows 40 minutes each Monday afternoon. Student learning through improved instruction has become the primary focus for this uninterrupted time. The professional development plan includes sessions that have ranged from assisting teachers with the transition of appropriate instructional strategies that can be used in a longer block to study groups that are utilizing the Understanding by Design approach to align standards-based instruction and assessment (Wiggins & McTighe, 1998). By using this "backward design," teachers are working smarter by clearly defining what essential questions they want students to be able to understand, activating their prior knowledge, and including students in a collaborative, learning partnership.

We know that the results that have emerged thus far would not have been possible without the shared planning and support of the leadership. This collaboration is imperative for continued success. Northridge Middle School students are benefiting and will continue to benefit from the improved daily schedule and instructional practice that allows teachers to meet the needs of all students. Therefore, our students will be better prepared academically for the next educational transition, high school.

Mr. Bruce Hibbard, Principal
Dr. Robert Brower, Superintendent
Ms. Colleen Moran, Director of Curriculum

STUDENT SCHEDULE EXAMPLE

BLOCK	SIXTH GRADE			SEVENTH GRADE			EIGHTH GRADE		
1	Explor	Explor	Explor	Math	Math	Math	Math	Math	Read
2	LA	LA	LA	LA	LA	LA	Explor	Explor	Explor
3	SS	SS	Sci	Explor	Explor	Explor	PE	LA	LA
4	Sci	Read	Well	Sci	Sci	Read	SS	Sci	Sci
5	Math	Math	Math	Well	SS	SS	Health	PE	SS
Bonus Trimester	1	2	3	1	2	3	1	2	3

Indiana Principal Leadership Academy
Room 229, State House
Indianapolis, IN 46204-2798

PRESORTED
FIRST-CLASS MAIL
U.S. POSTAGE PAID
Indianapolis, IN 462
Permit No. 7374

CALENDAR

June 16	Group 40 Orientation
	Seasons Conference Center – Nashville, IN
June 17-18	Groups 39 and 40 – IPLA Session
	Seasons Conference Center – Nashville, IN
June 27	Alumni Board Meeting
	DOE - Indianapolis
	Rolling admission is underway for Group 41
	Beginning in June of 2004

IPLA STAFF

Vince Barnes
Executive Director
vbarnes@doe.state.in.us

Becca Lamon
Associate Director
blamon@doe.state.in.us

Cindy George
Program Coordinator
cgeorge@doe.state.in.us

Krista Rigdon
Financial Officer
krigdon@doe.state.in.us

Ryan Stewart
Administrative Assistant
rstewart@doe.state.in.us

For more information on the
Indiana Principal Leadership Academy,
call 317-232-9004, fax 317-232-9005
or visit www.doe.state.in.us/ipla

Andy Roberts, *Special Edition* Designer, andy@tangentnet.com